

AMENDMENTS TO THE CLAIMS

Claim 1. (Currently amended) An apparatus for repairing a defect in an annulus of an intervertebral disc, wherein the periphery of the defect is surrounded by annular tissue, the apparatus comprising a plug having:

a biodegradable member having an outer surface and a bore;
a growth promoting matrix disposed in the biodegradable member; and
at least one annulus engaging ~~member~~ thread disposed on the outer surface of the biodegradable member and configured to engage the annular tissue;
said biodegradable member being configured such that upon insertion of the biodegradable member into the defect the defect is sealed and extrusion of the nucleus through the defect is prevented.

Claim 2. (Original) The apparatus of claim 1, wherein the biodegradable member further comprises a cap at an end.

Claim 3. (Original) The apparatus of claim 1, wherein the biodegradable member further comprises a cap at an end, the cap having a slot therein for mating with a tool.

Claim 4. (Original) The apparatus of claim 1, wherein the biodegradable member is made from a polymer.

Claim 5. (Original) The apparatus of claim 1, wherein the biodegradable member is made from a polymer selected from the group consisting of poly(L-lactides) (PLLA), poly(lactide-co-glycolides) (PLGA), polylactides (PLA), polyglycolic acids (PGA), polycaprolactones (PCL), polycarbonates, polyamides, polyanhydrides, polyamino acids, polyortho esters, polyacetals, polycyanoacrylates, degradable polyurethanes, albumin, collagen, elastin, reticulin, synthetic polyamino acids, prolamines, polysaccharides, alginate, heparin, biodegradable polymers of sugar units, and combinations thereof.

Claim 6. (Original) The apparatus of claim 1, wherein the growth promoting matrix includes a growth promoting compound.

Claim 7. (Original) The apparatus of claim 1, wherein the growth promoting matrix includes a growth promoting compound selected from the group consisting of growth factors, angiogenic factors, immune system suppressors, anti-inflammatory agents, antibiotics, living cells, cell-binding proteins and peptides, and combinations thereof.

Claim 8. (Previously presented) The apparatus of claim 1, wherein the growth promoting matrix includes a growth factor selected from the group consisting of TGF- β 1, TGF- β 2, and TGF- β 3, GDF-5, and BMPs.

Claim 9. (Cancelled)

Claim 10. (Original) The apparatus of claim 1, wherein the biodegradable hollow member includes at least one aperture providing communication between the outer surface and the bore.

Claim 11. (Currently amended) An apparatus for repairing a defect in the annulus of an intervertebral disc that includes a nucleus, wherein the periphery of the defect is surrounded by annular tissue, said apparatus comprising a plug having:

- a biodegradable member having an outer surface and a bore;
- a growth promoting matrix disposed in the bore;
- a cap at an end of the biodegradable member;
- at least one aperture connecting the outer surface of the biodegradable member to the growth promoting matrix disposed in the bore; and
- at least one annulus engaging ~~member~~ thread disposed on the outer surface of the biodegradable member and configured to engage the annular tissue;

said biodegradable member being configured such that upon insertion of the biodegradable member into the defect the defect is sealed and extrusion of the nucleus through the defect is prevented.

Claim 12. (Original) The apparatus of claim 11, wherein the growth promoting matrix is chondroinductive.

Claim 13. (Original) The apparatus of claim 11, wherein the cap has a slot therein for mating with a tool.

Claim 14. (Original) The apparatus of claim 11, wherein the biodegradable member is made from a polymer.

Claim 15. (Original) The apparatus of claim 11, wherein the biodegradable member is made from a polymer selected from the group consisting of poly(L-lactides) (PLLA), poly(lactide-co-glycolides) (PLGA), polylactides (PLA), polyglycolic acids (PGA), polycaprolactones (PCL), polycarbonates, polyamides, polyanhydrides, polyamino acids, polyortho esters, polyacetals, polycyanoacrylates, degradable polyurethanes, albumin, collagen, elastin, reticulin, synthetic polyamino acids, prolamines, polysaccharides, alginate, heparin, biodegradable polymers of sugar units, and combinations thereof.

Claim 16. (Original) The apparatus of claim 11, wherein the matrix comprises a growth promoting compound.

Claim 17. (Original) The apparatus of claim 12, wherein the matrix comprises a growth promoting compound selected from the group consisting of growth factors, angiogenic factors, immune system suppressors, anti-inflammatory agents, antibiotics, living cells, cell-binding proteins and peptides, and combinations thereof.

Claim 18. (Cancelled)

Claim 19. (Currently amended) A method of sealing a defect in the annulus of a human intervertebral disc that includes a nucleus, wherein the periphery of the defect is surrounded by annular tissue, the apparatus comprising:

providing a plug comprising a biodegradable member having an outer surface, a growth promoting matrix, and at least one annulus engaging member thread disposed on the outer surface of the biodegradable member and configured to engage the annular tissue; and

inserting the plug into the defect of the annulus of an intervertebral disc such that upon insertion of the biodegradable member into the defect the defect is sealed, extrusion of the nucleus through the defect is prevented, and the at least one annulus engaging member thread does not engage a vertebra.

Claim 20. (Original) The method of claim 19, wherein the biodegradable member has a first end and a second end.

Claim 21. (Original) The method of claim 19, wherein the growth promoting matrix comprises a growth promoting compound selected from the group consisting of growth factors, angiogenic factors, immune system suppressors, anti-inflammatory agents, antibiotics, living cells, cell-binding proteins and peptides, and combinations thereof.

Claim 22. (Original) The method of claim 19, wherein the biodegradable member has a sealing member at one end.

Claim 23. (Original) The method of claim 19, wherein the biodegradable member further comprises a cap at an end.

Claim 24. (Original) The method of claim 19, wherein the biodegradable member further comprises a cap at an end, and the cap has a slot therein for mating with a tool.

Claim 25. (Original) The method of claim 19, wherein the biodegradable member comprises a polymer.

Claim 26. (Original) The method of claim 19, wherein the biodegradable member is made from a polymer selected from the group consisting of poly(L-lactides) (PLLA), poly(lactide-co-glycolides) (PLGA), polylactides (PLA), polyglycolic acids (PGA), polycaprolactones (PCL), polycarbonates, polyamides, polyanhydrides, polyamino acids, polyortho esters, polyacetals, polycyanoacrylates, degradable polyurethanes, albumin, collagen, elastin, reticulin, synthetic polyamino acids, prolamines, polysaccharides, alginate, heparin, biodegradable polymers of sugar units, and combinations thereof.

Claim 27. (Original) The method of claim 19, wherein the biodegradable matrix is chondroinductive.

Claim 28. (Original) The method of claim 19, wherein the matrix comprises a growth promoting compound selected from the group consisting of growth factors, angiogenic factors, immune system suppressors, anti-inflammatory agents, antibiotics, living cells, cell-binding proteins and peptides, and combinations thereof.

Claim 29. (Cancelled)

Claim 30. (Original) The method of claim 19, wherein the biodegradable member comprises at least one aperture extending there-through to the growth promoting matrix.

Claim 31. (Original) The method of claim 19, whereby inserting the plug includes inserting, rotating, screwing, threading, or tapping the plug as to place the plug within the defect.

Claim 32. (Original) The method of claim 19, wherein inserting the plug is done using a tool.

Claim 33. (Previously presented) The method of sealing a defect of claim 32, wherein the tool is selected from the group consisting of a hemostat, a catheter, pliers, a slotted screwdriver, a cross head screwdriver, a hex shaped screwdriver, and a hammer.

Claim 34. (Cancelled)

Claim 35. (Previously presented) The apparatus of claim 1 wherein the biodegradable member is configured conform to the size and shape of the defect.

Claim 36. (Cancelled)

Claim 37. (Previously presented) The method of claim 19 wherein the plug is configured to conform to the size and shape of the defect.